SRS FACTS
ABOUT THE SAVANNAH RIVER SITE

Spent Nuclear Fuel at SRS

Personnel at the Savannah River Site (SRS) have extensive experience in safely receiving and managing a wide variety of spent nuclear fuel (SNF) assemblies from both domestic and foreign research reactors. Beginning in 1964 to the present, SRS has received over 2,200 casks containing 44,000 SNF assemblies. This work continues to be accomplished with no lost time injuries for more than eight years.

L Area and RBOF

Since 1996, the Spent Fuel Project (SFP) has received approximately 7,800 SNF assemblies in 350 casks from off-site sources. Fuel types include uranium-aluminum alloys, uranium oxides and uranium silicides, and others that vary in uranium enrichment between 19 and 93.5 percent uranium 235. SFP has received and handled about 10 different spent nuclear fuel transportation casks weighing up to 65,000 pounds. SFP also made about 360 on-site spent fuel cask transfers during this time.

Underwater storage facilities, called disassembly basins, were located in all five of SRS's reactor areas. These facilities were designed to store spent nuclear fuel and target assemblies discharged from the reactor cores. This storage allowed the nuclear material to cool after being irradiated in the reactors. The basins were also used to prepare the nuclear materials for transport to the F and H areas processing facilities.

Only L Basin still contains and receives fuel material. The basin has concrete walls 3 feet thick and holds 3.5 million gallons of water with pool depths of 17 to 30 feet. Although all assemblies are now "cold" enough to no longer require water cooling, water provides shielding to protect workers from radiation.

Each basin has four main sections used to receive, prepare, and store the fuel. The fuel assemblies are transferred through these sections via narrow vertical gateways used to isolate the sections.

In 1996, L Basin equipment was reconfigured to safely handle and store spent nuclear fuel from off-site (foreign and domestic) research reactors. In February 1997, the first off-site fuel was received and stored in L Basin. To avoid the cost of operating multiple facilities, SRS decided in 1998 to consolidate all of the stored spent fuel at SRS into the much larger, recently refurbished L Basin. By the beginning of FY03, all the fuel previously stored in K Basin had been moved to chemical separations facilities for processing or L Basin for storage. In October 2003, the Receiving Basin for Off-site Fuels (RBOF) was deinventoried, leaving L Basin as the only remaining SRS off-site fuel receipt and storage facility.

Current DOE plans call for the continued receipt of approximately 4,000 more off-site SNF assemblies through the year 2019. L Basin has adequate storage capacity to support current receipt plans.

The Future of SNF at SRS

DOE is committed to identify, develop and implement a technology for the stabilization and final disposition of all research reactor SNF received at SRS, in a manner that will be "road-ready" for disposal in DOE's planned geologic repository. Melt-dilute, direct disposal and conventional processing technologies are being considered.

In melt-dilute, furnaces would melt the SNF and dilute the uranium enrichment, while also reducing the volume needed for storage and disposal. For direct disposal, a Treatment and Storage Capability would be built in the building that formerly housed L Reactor. The direct disposal process dries the fuel and packages it in special containers with no further stabilization required for final disposition. Conventional processing would produce diluted liquid waste suitable for vitrification feed stock.

The final decision as to which technology or combination of technologies will be used is yet to be determined.